Central Cancer Registry Validate Event Report Use Case

Version 1.0

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Centers for Disease Control and Prevention

National Center for Chronic Disease Prevention and Health Promotion

Division of Cancer Prevention and Control

National Program of Cancer Registries

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General Information

1. Use Case ID

CCRUC 1.3

2. Use Case Name

Validate Event Report

3. Description

This use case describes the process for validating event reports in the central cancer registry (CCR) database.

4. Actors

- Central cancer registry (CCR) software
- Data source software
- CCR staff

5. Definitions

5.1 Terms Used to Describe Reports Submitted to the CCR

- **Event Report:** The generic name used for a submission of data from a data source. It can be a cancer registry abstract or an electronic submission of an electronic health record (EHR) report such as a pathology or X-ray report.

- **Abstracted Event Report:** An event report that has been created by a registrar or data source personnel that includes information from multiple health records.

- **EHR Event Report:** An event report from an electronic health record. It may include data from multiple databases within a facility; however, no human evaluation or determination of data values is made. Additionally, no trained personnel have evaluated its relevance or reportability prior to submission.

5.2 Generic Database Table Names Used in this Use Case

- **ToBeProcessed Table:** Holds the data source event reports that have been submitted to the central cancer registry.

- **ErrorMonitoring Table:** Maintains information regarding errors found in event reports. It is used to monitor the occurrence of errors and to ensure that corrected event reports have been re-submitted.

- **ToBePatientLinked Table**: Holds the event reports that need to be linked (matched) with the CCR database.

Validate Event Reports

Note: Diagrams for this use case are in Appendix A and Appendix B.

1.0 Preconditions

A set of conditions that must be met before the activities described in the use case can begin.

The batch file has been accepted to go forward.

2.0 Post Conditions

A set of conditions that must be met after the activities described in the use case have been completed.

Valid event reports have been added to the CCR database.

3.0 Priority

Describes the importance and sequence of the use case in the overall activities of the cancer registry.

High priority.

4.0 Frequency of Use

Describes how often the activities in the use case take place.

The activities in this use case will take place each time a new or resubmitted batch file is received.

5.0 Normal Course of Events

Describes the specific steps taken to perform the activity in the use case.

Normal refers to the steps that are taken when everything goes according to routine procedures. Problems and exceptions are described in section 6, Alternative Course.

Business rules are statements that describe a decision that must be made and agreed to by those involved in the activity. In the context of this document, a business rule describes the decision that needs to be made, and in some circumstances provides a recommendation; in others, options for consideration and use.

Software requirements are statements that describe the functionality of the software that is required or recommended.

5.1 This use case begins when a batch file has been loaded into the ToBeProcessed table.

5.2 Central cancer registry (CCR) software determines the source and type of event report (abstracted or EHR).

Note: A non-registry event report is submitted by any data source other than a cancer registry.

5.2a If it is a non-registry event report, processing continues with step 5.3.

5.2b If it is a registry event report, processing continues with step 5.5.

5.3 CCR software determines whether the event report is a relevant cancer. [BR01]

BR	Business Rule	Purpose	Remarks
01	CCR software should use cancer matching criteria from a recognized cancer registry source.	To ensure accurate and consistent selection of relevant event reports.	Automated eligibility criteria include: • NAACCR Search Term List at www.naaccr.org • SNOMED codes 80000–99999 • SEER ICD-O-3 selection criteria • Others: ICD-9, ICD-10, ICD-O-3, pathologist indicator Manual determination of eligibility by data source personnel, such as pathologists and radiologists

5.4 The registrar reviews the relevant event report to determine whether it is a reportable cancer. [BR02]

BR	Business Rule	Purpose	Remarks
02	CCR should use the national standards for reportability.		Reportability criteria can be found at www.seer.cancer.gov.

5.5 CCR software determines that the event report is not a duplicate of an existing event report in the CCR database.[1] [BR03]

BR	Business Rule	Purpose	Remarks
03	At a minimum, a deterministic record-by-record and data item-by-data item match should be used on the following data items: • Last name • First name • Sex • Social Security number • Date of birth • Primary site • Laterality • Date of diagnosis • Morphology (histology / behavior)	To confirm that the event report is new.	

[1] CCR Database – Where event reports are stored and are available for further processing and analysis.

5.6 CCR software assigns a record ID to the event report.

5.7 CCR software standardizes data values. [BR04]

BR	Business Rule	Purpose	Remarks
04	Standardization can include: • Capitalizing text • Inserting default values for empty non-required data elements • Correcting spelling of city names • Converting reporting facility standard codes to NAACCR standard codes (non-registry event reports)	To provide national standards and uniformity in reporting of data.	Do not replace blanks or null values with unknowns such as 999999.

5.8 CCR software runs edits on the event report and finds no errors.[2] [BR05, BR06]

BR	Business Rule	Purpose	Remarks
05	Event report should pass all edits required or provided by the central registry prior to submission.	To identify discrepancies in the record at the data source prior to sending to the central registry.	Documented as a business rule in NPCR–MERP Hospital Cancer Registry Perform Editing and Perform Reporting use cases.
06	CCR may use NPCR's EDITS software and the appropriate metafiles, which include NAACCR, SEER, NPCR, CoC, and state-specific edits.	To identify discrepancies in the record that were not identified at the data source.	More information on EDITS and edit checking of cancer data can be found at www.cdc.gov/npcr/resources/tools. **Note:** Data validation checks must be developed for other data source event reports. NAACCR edits can be used for demographic data items.

[2] Individual record edits identify errors within one record. Inter-record edits also are performed on the patient's consolidated tumor records.

5.9 The registrar performs visual editing on the cancer registry event report to check for discrepancies.[3] [BR07, BR08, BR09]

5.9.1 The registrar updates the abstract with correct data.

5.9.2 The registrar notifies the data source that data are incorrect.

5.9.3 CCR software inserts error information into the ErrorMonitoring table.

BR	Business Rule	Purpose	Remarks
07	A subset of cancer registry event reports in the batch should be visually edited.	To validate the accuracy of coded information.	Registries visually edit 10%–25% of cancer registry event reports within the batch. NPCR–MERP recommends a workgroup review.
08	CCR software should provide an option to delete event reports as needed.	To validate the accuracy of coded information.	After 6 months and when the results of visual editing are more than 99% accurate, these abstracts should be included in the "subset review" category.
09	CCR software should provide an option to delete event reports as needed.	To validate the accuracy of coded information.	The duration of 100% visual editing of these reports should be determined by the complexity of the data item and the results of visual editing.

5.10 The event report is inserted into the CCR database.

5.11 CCR software identifies event reports as potentially eligible for inclusion in a special study and notifies the special study group. [Business Use Case 4.1, Provide Data for Use by Others]

[3] Visual editing is the comparison of text and codes within an abstract to validate that the hospital registrar coded the information correctly.

5.12 CCR software notifies the data source of the results of batch processing and validation. [BR10]

BR	Business Rule	Purpose	Remarks
10	At a minimum, the following information should be included in the Report of Processing Batch File and validation of the event report: • Date of File • Name of File • Number of Records • Number of Duplicates • Number of Passing EDITS • Number of Failing EDITS – Details of failed edits	To provide the results of the CCR's processing to the data source.	

5.13 CCR software sends the new event report to the ToBePatientLinked table.

The process ends.

6.0 Alternative Course of Events

Numbering in this section refers to its associated step above in section 5, Normal Course of Events.

5.3a CCR software determines the event report is not a relevant cancer.

5.3a.1 CCR software deletes the non-relevant, non-registry event report.

5.4a The registrar determines the event report is not a reportable cancer.

5.4a.1 The registrar discards the relevant, non-registry, non-reportable event report.

5.4b The registrar is not sure whether the relevant non-registry event report is reportable.

5.4b.1 The registrar requests more information from the data source.

5.4b.2 The registrar receives a response from the data source, and step 5.4 is repeated.

5.8a The event report fails one or more state-specific edit checks established by the CCR to be run at the hospital registry. [BR11, BR12, BR13, BR14]

5.8a.1 CCR software stores a copy of the erroneous event report and sends the edit results to the reporting source.

BR	Business Rule	Purpose	Remarks
11	All editing results (EDITS metafile edits and CCR state-specific editing) should be sent back to the reporting source.	To ensure correction of the error occurs at the source of the error.	
12	The reporting source should return the event report within two weeks of being informed of the edit error.		
13	Hospital software should have an update function to allow the record to be resubmitted when data is changed.	To ensure corrected records are resubmitted to the central registry.	
14	All edit triggers and results should be stored by EDITS and registry-specific editing software.	To monitor the occurrence of errors identified at the CCR and ensure corrected records are re-submitted.	Information in the ErrorMonitoring table includes: • Record ID • Data item or field name or ID number • Description of error • Name or ID of the registrar performing visual editing

5.8b The event report fails one or more edit checks applied at the CCR.

5.8b.1 The registrar reviews output from the editing process to decide if more information is needed.

5.8c. The registrar decides more information is needed.

5.8c.1 The registrar requests more information from the data source.

5.8c.2 The registrar receives a response from the data source.

5.8c.3 The registrar updates the abstract with the correct data.

5.8c.4 The registrar notifies the data source that the data are incorrect and the process continues with step 5.9. **[BR11, BR12, BR13, BR14]**

BR	Business Rule	Purpose	Remarks
11	All editing results (EDITS metafile edits and CCR state-specific editing) should be sent back to the reporting source.	To ensure correction of the error occurs at the source of the error.	
12	The reporting source should return the event report within two weeks of being informed of the edit error.		
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5.8d. The registrar decides more information is not needed.

5.8d.1 The registrar updates the abstract with the correct data.

5.8d.2 The registrar notifies the data source that the data are incorrect and the process continues with step 5.9.. **[BR11, BR12, BR13, BR14]**

BR	Business Rule	Purpose	Remarks
11	All editing results (EDITS metafile edits and CCR state-specific editing) should be sent back to the reporting source.	To ensure correction of the error occurs at the source of the error.	
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7.0 Business Rules

A statement that describes a decision that must be made and agreed to by those involved in the activity. In the context of this document, a business rule describes the decision that needs to be made, and in some circumstances provides a recommendation; in others, options for consideration and use.

Business rules for this use case are presented under the step to which they apply.

BR	Business Rule	Purpose	Remarks
01	CCR software should use cancer matching criteria from a recognized cancer registry source.	To ensure accurate and consistent selection of relevant event reports.	Automated eligibility criteria include: • NAACCR Search Term List at www.naaccr.org • SNOMED codes 80000–99999 • SEER ICD-O-3 selection criteria • Others: ICD-9, ICD-10, ICD-O-3, pathologist indicator Manual determination of eligibility by data source personnel, such as pathologists and radiologists
02	CCR should use the national standards for reportability.		Reportability criteria can be found at www.seer.cancer.gov.
03	At a minimum, a deterministic record-by-record and data item-by-data item match should be used on the following data items: • Last name • First name • Sex • Social Security number • Date of birth • Primary site • Laterality • Date of diagnosis • Morphology (histology / behavior)	To confirm that the event report is new.	

BR	Business Rule	Purpose	Remarks
04	Standardization can include: • Capitalizing text • Inserting default values for empty non-required data elements • Correcting spelling of city names • Converting reporting facility standard codes to NAACCR standard codes (non-registry event reports)	To provide national standards and uniformity in reporting of data.	Do not replace blanks or null values with unknowns such as 999999.
05	Event report should pass all edits required or provided by the central registry prior to submission.	To identify discrepancies in the record at the data source prior to sending to the central registry.	Documented as a business rule in NPCR–MERP Hospital Cancer Registry Perform Editing and Perform Reporting use cases.
06	CCR may use NPCR's EDITS software and the appropriate metafiles, which include NAACCR, SEER, NPCR, CoC, and state-specific edits.	To identify discrepancies in the record that were not identified at the data source.	More information on EDITS and edit checking of cancer data can be found at www.cdc.gov/npcr/resources/tools. **Note:** Data validation checks must be developed for other data source event reports. NAACCR edits can be used for demographic data items.
07	A subset of cancer registry event reports in the batch should be visually edited.	To validate the accuracy of coded information.	Registries visually edit 10%–25% of cancer registry event reports within the batch. NPCR–MERP recommends a workgroup review.
08	CCR software should provide an option to delete event reports as needed.	To validate the accuracy of coded information.	After 6 months and when the results of visual editing are more than 99% accurate, these abstracts should be included in the “subset review” category.
09	CCR software should provide an option to delete event reports as needed.	To validate the accuracy of coded information.	The duration of 100% visual editing of these reports should be determined by the complexity of the data item and the results of visual editing.

BR	Business Rule	Purpose	Remarks
10	At a minimum, the following information should be included in the Report of Processing Batch File and validation of the event report: • Date of File • Name of File • Number of Records • Number of Duplicates • Number of Passing EDITS • Number of Failing EDITS – Details of failed edits	To provide the results of the CCR's processing to the data source.	
11	All editing results (EDITS metafile edits and CCR state-specific editing) should be sent back to the reporting source.	To ensure correction of the error occurs at the source of the error.	
12	The reporting source should return the event report within two weeks of being informed of the edit error.		
13	Hospital software should have an update function to allow the record to be resubmitted when data is changed.	To ensure corrected records are resubmitted to the central registry.	
14	All edit triggers and results should be stored by EDITS and registry-specific editing software.	To monitor the occurrence of errors identified at the CCR and ensure corrected records are re-submitted.	Information in the ErrorMonitoring table includes: • Record ID • Data item or field name or ID number • Description of error • Name or ID of the registrar performing visual editing

8.0 Exceptions

None.

9.0 Includes

None.

10.0 Special Requirements

None.

11.0 Assumptions

None.

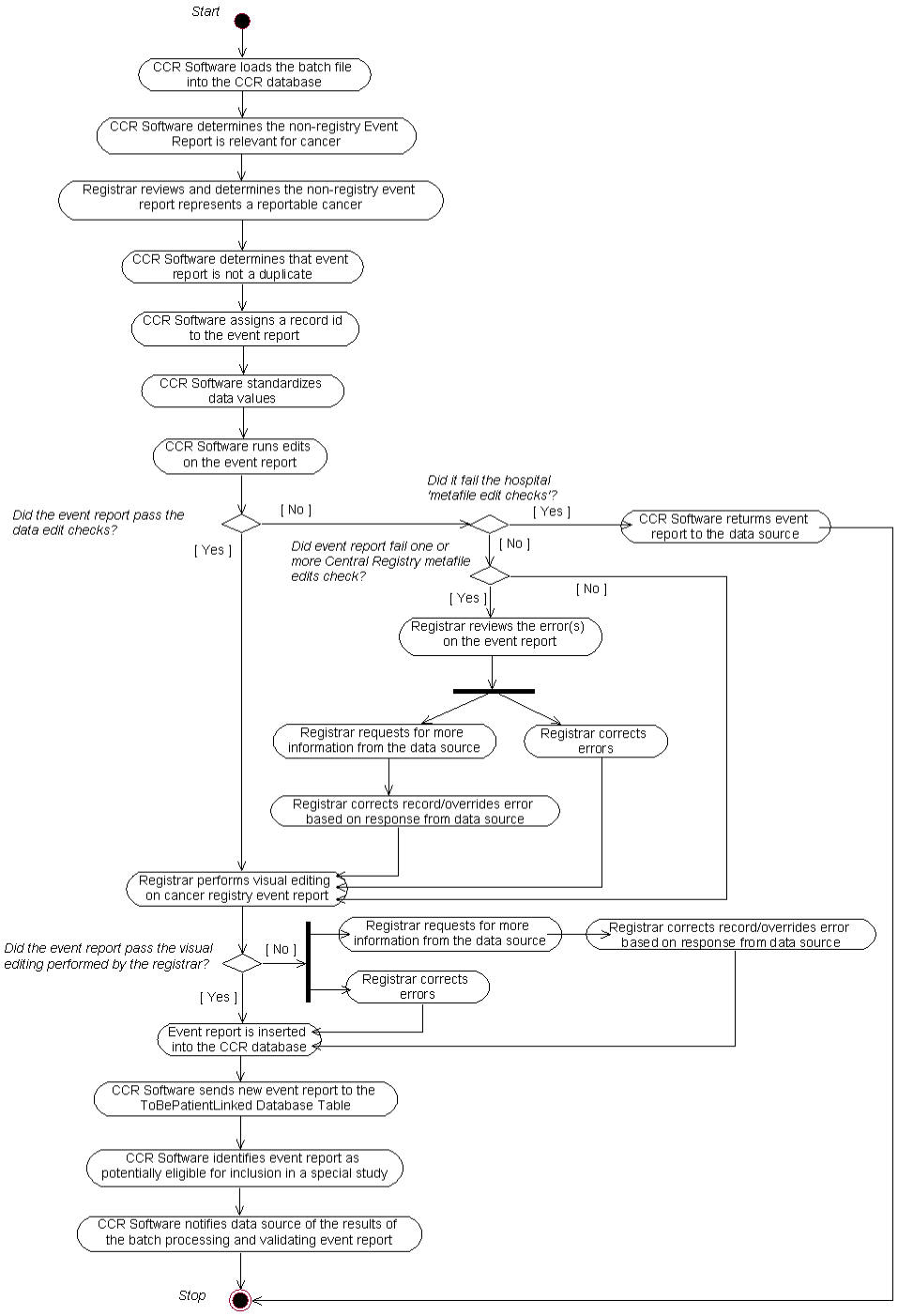
12.0 Notes and Issues

None.

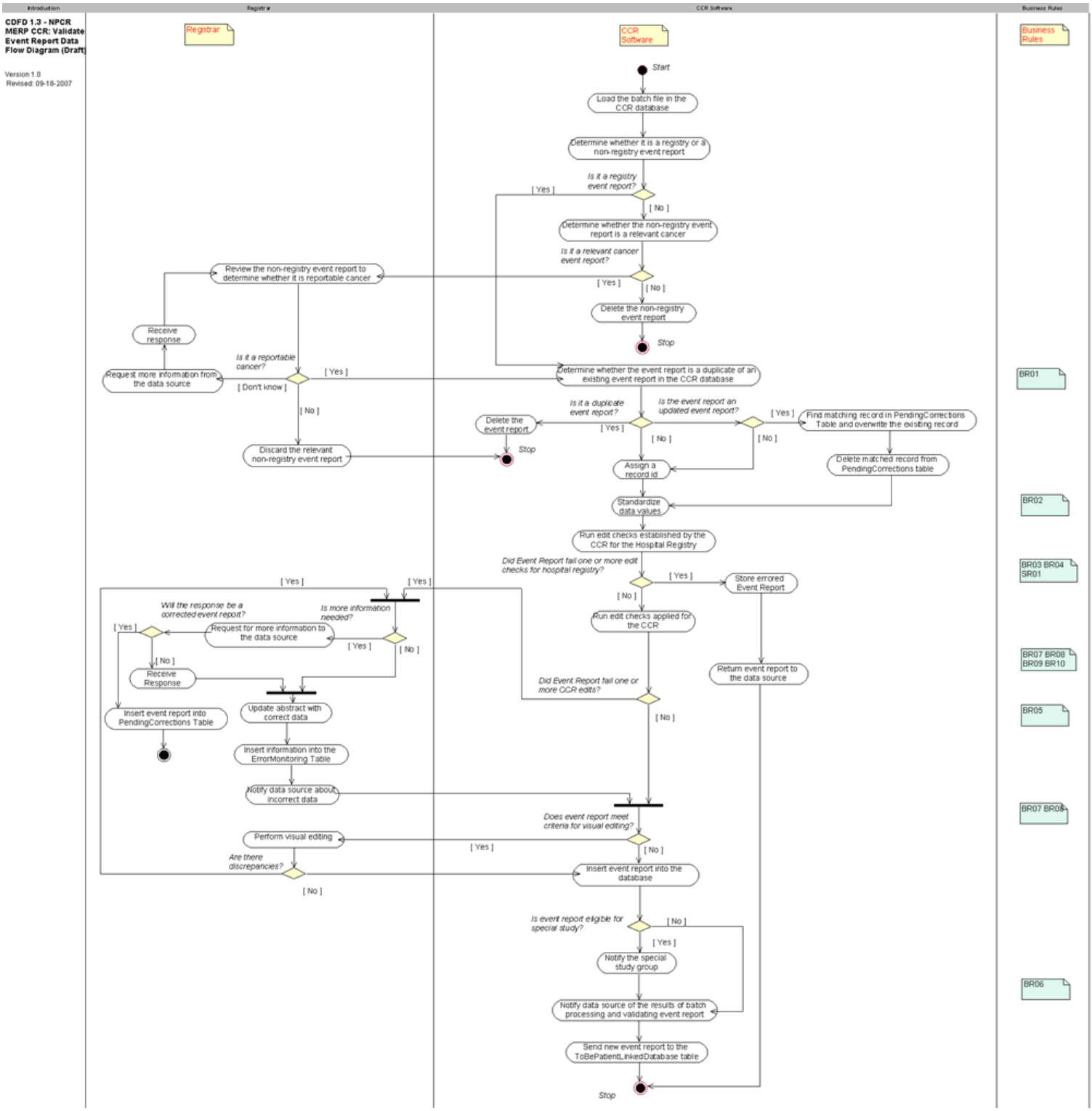
13.0 References

Baseline use case content provided in part by SEER*DMS design documents.

Appendix A: Validate Event Report Workflow Diagram



Appendix B: Validate Event Report Data Flow Diagram



Appendix C: Automated Error Correction Rules

Arkansas
CancerCORE Auto-Tasks (Record Updates)

- **SEER General Summary Stage Fix**
  Logic: Modifies the general summary stage field depending on the values for behavior and primary site.

- **Vital Status Fields Fix**
  Logic: Modifies the cause of death, ICD revision number, and place of death depending on the value for vital status.

- **Laterality Fix**
  Logic: Modifies laterality based on the primary site code being a paired site.

- **Race Fix**
  Logic: Modifies race 2, race 3, race 4, and race 5 based on the value for race.

- **Occupation/Industry Fields Fix**
  Logic: Modifies the industry code based on industry text; modifies the occupation code based on occupation text.

- **Address Fields Fix**
  Logic: Checks the validity of values and combinations of the street address, county, ZIP Code, city, and state fields for the Address at Diagnosis and the Current Address.

- **Geo-Coder**
  Logic: Geo-codes data from ZIP Code plus 4 field and modifies the Census block group, Census tract, latitude, and longitude depending on the value for GIS quality field.

- **ICD-O-2 to ICD-O-3 Conversion**

- **Treatment Fields Fix**
  Logic: Modifies:

  - The reason for no surgery and the date of surgery based on the surgery summary value.
  - The reason for no radiation and the date of radiation based on the radiation summary value.
  - The date of chemotherapy based on the chemotherapy summary.
  - The date of immunotherapy based on the immunotherapy summary.
  - The date of hormone therapy based on the hormone therapy summary.
  - The date of other treatment based on the other treatment summary.
  - The date of non-cancer directed surgery based on the non-cancer directed surgery summary.
  - The Systemic Date, the Date Of Initial Treatment-CoC, and the Date Of Initial Treatment-SEER based on the other treatment date fields.
  - The surgery/radiation sequence field based on the surgery summary, radiation summary, date of surgery, and date of radiation fields.

- **Pre Collaborative Staging Fields Fix**
  Logic: Removes data for collaborative staging fields for cases diagnosed before 2004.

Arkansas

File submissions from all hospital registrars are uploaded using Web Plus.

- Web Plus sends an automated EDITS report to the facility.
- The facility corrects any errors on the file and upload the file again.

Special Processing for Missing or Corrupted Data Items

The Arkansas registry performs visual editing through its merging process, reviewing critical data items during the process.

It uses a Query Tool to review certain data items for validity; this is another way to perform visual editing.

When missing or corrupted data items are identified, the incident is documented and the registrar is notified. Sometimes the data are corrected manually, and other times the facility corrects the errors and resends the data.

Florida's Validate Event "As-Is" Use Case

1. Receive the batch file through a secure Internet connection.

2. The basic file structure is checked, including data types and basic ranges.

3. If the file structure is invalid, the entire batch is rejected regardless if one abstract or all fail. Assumption: If one is bad, the integrity of meeting the layout is questioned.

4. If the file structure is valid, edits are performed. The only edits allowed to fail are ones that may require further documentation and overrides or whose ability to pass is dependent on data previously received and that the person submitting the data cannot do anything with at the time of the submission.

5. If the required edits fail, the entire batch is rejected, a log of each abstract's identifying information is stored in a reject log, and the facility is required to fix the problems and resubmit the entire batch. Again, if one abstract or all fail, the entire batch is rejected. The reject log is interactively updated as batches are rejected and cases are resubmitted, so the registry can go back to the facility and find out why certain cases have not been resubmitted. If it has been forgotten, it serves as a reminder. If the abstract's identifying information has changed or the case has been deemed non-reportable, the reject log is flagged accordingly.

6. If all of the required edits pass, the batch is forwarded to the field coordinator in charge of the submitting facility, who is notified by e-mail that the batch has arrived. The facility performs additional processing, which includes inter-record edits and override review.

Potential "To-Be" Modification

Many states may have some concerns with the rejection of good abstracts in step 5. This has been received very well by facilities in Florida. For the most part, they are working in batches and it much easier to fix problem abstracts and extract the entire batch. However, it may be a good idea to accept the abstracts that pass edits, and reject only the ones that fail. If Florida's state registry considers this, they may survey their reporting facilities to determine which method works best for them.

Use Case Administrative Information

1. Use Case History

Version 2.0 presented to the NPCR–MERP Workgroup.

2. Created By

- NPCR–MERP Central Cancer Registry Workgroup
- NPCR–MERP Technical Development Team

3. Date Created

May 14, 2007

4. Last Updated By

MA

5. Date Last Updated

March 2, 2008

Revision History

Name	Date	Reason for Changes	Version
MA	5/14/076	Created the new use case	0.01
MA	6/1/07	Added more content	0.01
WKS, MA	6/11/07	Added steps and business rules; started the alternate course of events	0.02
Central Cancer Registry Workgroup	6/12/07	Validated steps	0.03
WKS	7/3/07	Added processing of failed reports; added appendix A for automatic correction of errors	0.04
MA	7/27/07	Changed the layout of the normal course of events and the business rules	0.05
WKS, MA	7/31/07	Editorial and content changes	0.06
Central Cancer Registry Workgroup	8/7/07		0.07
MA	3/2/08	Updated with technical review comments	1.0